

**SYSTEM AND METHOD FOR PROVIDING MULTIMEDIA
ELECTRONIC MAIL SERVICE IN A PORTABLE TERMINAL**

PRIORITY

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This application claims priority to an application entitled "System and Method for Providing Multimedia Electronic Mail Service in Portable Terminal" filed in the Korean Industrial Property Office on February 19, 2001 and assigned Serial No. 2001-8147, the contents of which are hereby incorporated by reference.

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BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to a portable terminal, and in particular, to a method and system for providing an electronic mail (E-mail) service to users through portable terminals having a wireless Internet access function.

2. Description of the Related Art

The rising demand for multimedia services increases interest in an E-mail service via a PC (personal Computer) in diverse forms such as a music mail, a picture card, an animation mail, and the like.

Meanwhile, portable terminals like PDAs (Personal Digital Assistants), smart phones, and mobile phones do no more than provide text information due to limitations in the data rate of a network and the performance of the processors, memories, and LCDs (Liquid Crystal Displays) of the terminals. Yet, with the advent of future mobile communication networks like CDMA 2000 (Code Division Multiple Access 2000), high rate data transmission is enabled and thus

terminals supporting moving pictures can provide multimedia data transmission/reception.

One of the techniques of exchanging multimedia information between portable terminals is to automatically connect them to a predetermined server over the Internet wirelessly upon receipt of a periodical message or a particular message and download multimedia information. This technique is implemented by adapting such an application service as for a PC to a portable terminal. Therefore, the portable terminal needs a local memory for storing received multimedia data. A multimedia data file is usually several megabytes in length. To store this multimedia data file, a large capacity local memory is required, which a typical moving-picture terminal cannot afford. In addition, a multimedia transmission/reception service is needed aside from the general E-mail service.

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SUMMARY OF THE INVENTION

It is, therefore, an object of the present invention to provide a system and method for providing a multimedia E-mail service by a general E-mail service without a local memory for storing received multimedia data.

The foregoing and other objects of the present invention are achieved by providing a system and method for providing an E-mail service through a portable terminal with a wireless Internet access function. A multimedia server receives a multimedia E-mail including multimedia data and E-mail data to be transmitted to the portable terminal, stores the multimedia data in an internal local memory, and adds URL information as a predetermined format string to the E-mail content. An E-mail server receives the E-mail from the multimedia server and notifies the receiving portable terminal of the arrival of the E-mail.

The portable terminal receives the E-mail from the E-mail server, parses the E-mail content, and displays the E-mail content with multimedia link information if the predetermined format string is confirmed.

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BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features and advantages of the present invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings in which:

10 FIG. 1 illustrates a system architecture according to an embodiment of the present invention;

FIG. 2 is a block diagram of a portable terminal having a typical video transmission/reception function and an Internet access function;

15 FIG. 3 illustrates an example of a multimedia E-mail window according to the present invention;

FIGs. 4A and 4B illustrate the format of a multimedia E-mail according to the embodiment of the present invention;

FIG. 5 is a flowchart illustrating an operation in a VOD server according to the present invention;

20 FIG. 6 is a flowchart illustrating an operation in a portable terminal according to the present invention; and

FIGs. 7A and 7B illustrate examples of a multimedia E-mail menu according to the embodiment of the present invention.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A preferred embodiment of the present invention will be described herein below with reference to the accompanying drawings. In the following description, well-known functions or constructions are not described in detail since they

would obscure the invention in unnecessary detail.

FIG. 1 illustrates system architecture according to an embodiment of the present invention. Referring to FIG. 1, a VOD (Video On Demand) server 108 is connected as a multimedia server to the Internet 106 and to an E-mail server 110 over a CDMA 2000 network in order to provide a multimedia E-mail service according to the present invention to users with E-mail IDs by a general E-mail service. A terminal 100 is a portable terminal having a video transmission/reception function and an Internet access function such as a PDA, a smart phone, and a mobile phone. The terminal 100 is connected to the Internet 106 via a mobile communication network 102 and a PDSN (Packet Data Serving Node) 104. An MSC (Mobile Switching Center) 116 is connected to an SMSC (Short Message Service Center) 118 in the mobile communication network 102. The VOD server 108 and the E-mail server 110 that are connected to the Internet 106 may be incorporated into one system or exist in separate systems.

FIG. 2 is a block diagram of the portable terminal 100 shown in FIG. 2. Referring to FIG. 2, an MRFU (Mobile Radio Frequency Unit) 200 receives a signal in a reception frequency band, converts the received analog signal to a digital signal, and feeds the digital signal to an MSP (Mobile Station Processor) 202. The MRFU 200 also converts a transmission digital signal to an analog signal, amplifies the power of the analog signal, and wirelessly transmits the amplified signal through an antenna. The MRFU 200 is divided into an RF module and a BBA (BaseBand Analog) module. The MSP 202 performs the video transmission/reception function and the wireless Internet access function as well as typical functions related with a mobile terminal according to an input command or upon incoming of a call. The MSP 202 also analyzes a forward channel data message and reproduces an analog voice signal from the received data through demodulation, deinterleaving, decoding, signal processing, and

vocoding, or performs the operation reversely. For example, the MSP 202 outputs a reproduced analog voice signal through a speaker, and converts an analog voice signal received from a microphone to a CDMA digital signal and transmits it on a reverse channel through the MRFU 200. In addition, the MSP

5 202 outputs data indicating operational states, messages, and character generation control data to an OSD (On Screen Display) 204. The OSD 204 generates an OSD video signal according to the character generation control data received from the MSP 202 and feeds the OSD video signal to an LCD driver 210. A moving picture reproducer 208 decodes video data received from the Internet 106

10 via the mobile communication network 102 and outputs the decoded video data to the LCD driver 210. The LCD driver 210 switches the received OSD video signal and the moving picture signal according to a predetermined operation mode best suited for the type of LCD 212 and outputs the switched signal to the LCD 212. A keypad 214 includes a plurality of digit keys and function keys and

15 outputs key data to the MSP 202 by user manipulation.

Meanwhile, a multimedia E-mail according to the present invention is comprised of multimedia data and E-mail data as shown in FIG. 4A. The multimedia E-mail can be made using a bi-directional moving picture terminal

20 with a camera, a PC with a camera, or a multimedia E-mail only generator. An example of a multimedia E-mail window for generating a multimedia E-mail in a PC is shown in FIG. 3. The multimedia E-mail window 300 includes a window 302 for entering the Internet address of the VOD server 108 to receive a multimedia E-mail, a window 304 that displays an image when the image is

25 transmitted, a transmitter information window 306, a receiver information entering window 208, a content window 310, a subject window 312, and icons 314 to 318 with which to select record, reproduce, and transmit.

The multimedia E-mail made using a PC or a portable terminal is

transmitted to the VOD server 108 via the Internet 106. Then, the VOD server 108 stores only the multimedia data and transmits the E-mail data to the E-mail server 110.

5 FIG. 5 illustrates the operation of the VOD server 108. Upon receipt of the multimedia E-mail in step 400, the VOD server 108 stores the multimedia data of a multimedia E-mail in an internal local memory in step 402. In step 404, the VOD server 108 adds VOD URL (Uniform Resource Locator) information as a string of a predetermined format to an E-mail content and transmits the E-mail
10 to the E-mail server 110. As described later, the VOD URL information is added to the E-mail content so that a receiving portable terminal can access data stored in the VOD server 108. Therefore, the URL information has a particular format indicating multimedia data. For example, if URL information is http://www.vodservice.com/index001/voddata.vod, “http://” and “vod” at the end
15 indicate that the URL information is associated with multimedia data. Thus, the E-mail transmitted to the E-mail server 110 has additionally VOD URL information as shown in FIG. 4B.

Upon receipt of the E-mail destined to a user with an ID registered in the
20 E-mail server 110, the E-mail server 110 notifies the user of the arrival of the E-mail by an SMS. The E-mail server 110 processes the E-mail with VOD URL information as shown in FIG. 4B in the same manner as a typical E-mail and only the receiving portable terminal knows that the E-mail is a multimedia E-mail.

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If the user has a portable terminal supporting a multimedia service and the portable terminal is provided with an E-mail application recognizing the particular format of an E-mail according to the present invention, the user can be connected to the E-mail server 110 via the portable terminal, read the E-mail, and

be connected to the VOD server 108 for a multimedia service. If the portable terminal does not support the multimedia service, the user can read only the text of the E-mail content.

5 FIG. 6 is a flowchart illustrating the operation of the MSP 202 according to a multimedia E-mail application of the portable terminal 100 according to the embodiment of the present invention. Referring to FIG. 6, upon receipt of an E-mail arrival message by the SMS in step 500, the MSP 202 outputs an E-mail arrival alarm audibly and/or visibly in the same manner as when a general E-mail
10 arrives in step 502, and waits for a user to invoke an E-mail function in step 504.

If the E-mail function is invoked, the MSP 202 initiates a POP3 (Post Office Protocol) procedure as it does when a general E-mail is received in step 506. By the POP3 the MSP 202 reads corresponding E-mail information from
15 the E-mail server 110. In steps 508 to 512, the MSP 202 parses the content of the E-mail, reads out the E-mail from the E-mail server 110 by the POP3 being an E-mail reading protocol, classifies the subject, sending time, and transmitter of the E-mail, and determines whether there is a predetermined string indicating VOD URL information being multimedia link information in the E-mail content.
20 If the string, that is, the link information, does not exist, this implies that the E-mail is not a multimedia E-mail. Thus, the MSP 202 provides a general E-mail service in step 526. Otherwise, the MSP 202 displays a multimedia E-mail menu on the LCD 212 so that the user may select a VOD service, a multimedia service, in step 514. The multimedia E-mail menu can be made as shown in
25 FIGs. 7A and 7B. In FIGs. 7A and 7B, reference numeral 600 denotes a window for displaying a subject entered in the window 312 shown in FIG. 3, reference numeral 602 denotes an E-mail content, reference numeral 604 denotes VOD URL information, and reference numeral 606 denotes menu items corresponding the VOD URL information. In FIG. 7A, the link information is

incorporated in the E-mail content. Here, to discriminate the link information from the content, a different font can be used. In FIG. 7B, the link information is given as selectable menu items.

5 In this state, if the user wants to receive multimedia data, he selects the link information directly in the display shown in FIG. 7A or menu items 1 or 2 in the display shown in FIG. 7B. When the user selects the VOD service in step 516, the MSP 202 is connected to the VOD server 108 in step 518 and then to the VOD URL in step 520. The portable terminal 100 receives multimedia data in a
10 streaming file format, reproduces the multimedia data, and outputs the reproduced data in step 522. The streaming of the multimedia data allows the portable terminal to reproduce the data without storing it. Streaming refers to direct reproduction of received data without storing it in a local memory. The streaming follows the ISO/IEC MPEG-4 intermedia file format.

15 Therefore, arrivals of multimedia mail and link information are notified to a terminal user by a general E-mail service and multimedia is transmitted to the user utilizing streaming multimedia. Consequently, there is no need for a local memory, voice and pictures. Also, texts can be exchanged by transmitting a
20 mail including multimedia data such as audio data, video data, and text messages.

While the invention has been shown and described with reference to a certain preferred embodiment thereof, it is a mere exemplary application. Even though the embodiment of the present invention was described in relation to
25 transmission of video data, it is also applicable to multimedia data. Therefore, it will be understood by those skilled in the art that various changes in form and details may be made therein without departing from the spirit and scope of the invention as defined by the appended claims.